

Claims

1. A method for classification of cancer in an individual having contracted cancer comprising
 - 5 i) in a sample from the individual having contracted cancer determining the microsatellite status of the tumor and
 - ii) in a sample from the individual having contracted cancer, said sample comprising a plurality of gene expression products the presence and/or amount which forms a pattern, determining from said pattern a prognostic marker, wherein the microsatellite status and the prognostic marker is determined simultaneously or sequentially
 - 10 iii) classifying said cancer from the microsatellite status and the prognostic marker.
- 15 2. The method according to claim 1, wherein the prognostic marker is the hereditary or sporadic nature of said cancer the determination of which comprises the steps of
 - 20 i) in a sample from the individual having contracted cancer, said sample comprising a plurality of gene expression products the presence and/or amount of which forms a pattern that is indicative of the hereditary or sporadic nature of said cancer
 - ii) determining the presence and/or amount of said gene expression products forming said pattern,
 - 25 iii) obtaining an indication of the hereditary or sporadic nature of said cancer in the individual based on step ii).
3. The method of claims 1 or 2, wherein the determination of microsatellite status comprises the steps of
 - 30 i) in a sample from the individual having contracted cancer, said sample comprising a plurality of gene expression products the presence and/or amount of which forms a pattern that is indicative of the microsatellite status of said cancer,
 - ii) determining the presence and/or amount of said gene expression products forming said pattern,

iii) obtaining an indication of the microsatellite status of said cancer in the individual based on step ii).

4. The method according to claims 1, 2 or 3, wherein the cancer is colon cancer.

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5. The method of any of the preceding claims, wherein a plurality of gene expression products are analysed using solid support, having binding partners (hybridisation partners) for said plurality of gene expression products forming a pattern.

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6. The method of any of the preceding claims, wherein a plurality of gene expression products are analysed using binding partners (hybridisation partners) for said plurality of gene expression products forming a pattern.

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7. The method of claims 1,2 or 3, wherein at least two of said plurality of gene expression products forming a pattern are used to determine said microsatellite status are selected individually from a group of genes indicative of microsatellite status.

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8. The method of claims 1, 2 or 3, wherein at least two of said plurality of gene expression products used to determine the hereditary or sporadic nature of said colon cancer are selected individually from a group of genes indicative for the hereditary or sporadic nature of the cancer.

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9. The method of claims 1, 2 or 3, wherein at least two of said plurality of gene expression products forming a pattern used to determine said microsatellite status are selected individually from the group consisting of the genes listed below

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Gene name	Ref seq	Gene symbol	SEQ ID NO.:
chemokine (C-C motif) ligand 5	<u>NM_002985</u>	CCL5	1
Tryptophanyl-tRNA synthetase	<u>NM_004184</u>	WARS	2
Proteasome (prosome, macropain) activator subunit 1 (PA28 alpha)	<u>NM_006263</u>	PSME1	3
Bone marrow stromal cell antigen 2	<u>NM_004335</u>	BST2	4
ubiquitin-conjugating enzyme E2L 6	<u>NM_004223</u>	UBE2L6	5

A kinase (PRKA) anchor protein 1	<u>NM_003488</u>	AKAP1	6
Proteasome (prosome, macropain) activator subunit 2 (PA28 beta)	<u>NM_002818</u>	PSME2	7
carcinoembryonic antigen-related cell adhesion molecule 5	<u>NM_004363</u>	CEACAM5	8
FERM, RhoGEF (ARHGEF) and pleckstrin domain protein 1 (chondrocyte-derived)	<u>NM_005766</u>	FARP1	9
myosin X	<u>NM_012334</u>	MYO10	10
heterogeneous nuclear ribonucleoprotein L	<u>NM_001533</u>	HNRPL	11
Autocrine motility factor receptor	<u>NM_001144</u>	AMFR	12
dimethylarginine dimethylaminohydrolase 2	<u>NM_013974</u>	DDAH2	13
tumor necrosis factor, alpha-induced protein 2	<u>NM_006291</u>	TNFAIP2	14
mutL homolog 1, colon cancer, nonpolyposis type 2 (<i>E. coli</i>)	<u>NM_000249</u>	MLH1	15
thymidylate synthetase	<u>NM_001071</u>	TYMS	16
intercellular adhesion molecule 1 (CD54), human rhinovirus receptor	<u>NM_000201</u>	ICAM1	17
general transcription factor IIA, 2, 12kDa Rho-associated, coiled-coil containing protein kinase 2	<u>NM_004492</u>	GTF2A2	18
ATP binding protein associated with cell differentiation	<u>NM_004850</u>	ROCK2	19
NCK adaptor protein 2	<u>NM_005783</u>	TXNDC9	20
phytanoyl-CoA hydroxylase (Refsum disease)	<u>NM_003581</u>	NCK2	21
metastasis-associated gene family, member 2	<u>NM_006214</u>	PHYH	22
amiloride binding protein 1 (amine oxidase (copper-containing))	<u>NM_004739</u>	MTA2	23
Biliverdin reductase A	<u>NM_000712</u>	BLVRA	24
phospholipase C, beta 4	<u>NM_000933</u>	PLCB4	25
chemokine (C-X-C motif) ligand 9	<u>NM_002416</u>	CXCL9	26
purine-rich element binding protein A	<u>NM_005859</u>	PURA	27
quinolinate phosphoribosyltransferase (nicotinate-nucleotide pyrophosphorylase (carboxylating))	<u>NM_014298</u>	QPRT	28
retinoic acid receptor responder (tazarotene induced) 3	<u>NM_004585</u>	RARRES3	29
chemokine (C-C motif) ligand 4	<u>NM_002984</u>	CCL4	30
forkhead box O3A	<u>NM_001455</u>	FOXO3A	31
interferon, alpha-inducible protein (clone IFI-6-16)	<u>NM_002038</u>	G1P3	32
chemokine (C-X-C motif) ligand 10	<u>NM_0022873</u>	CXCL10	33
metallothionein 1G	<u>NM_001565</u>	MT1G	34
tumor necrosis factor receptor superfamily, member 6	<u>NM_005950</u>	NM_005950	35
	<u>NM_000043</u>	TNFRSF6	36
	<u>NM_152877</u>		37
	<u>NM_152876</u>		133
	<u>NM_152875</u>		132
	<u>NM_152872</u>		134
	<u>NM_152873</u>		130
	<u>NM_152871</u>		33
			129

endothelial cell growth factor 1 (platelet-derived)	<u>NM_001953</u>	ECGF1	38
SCO cytochrome oxidase deficient homolog 2 (yeast)	<u>NM_005138</u>	SCO2	39
chemokine (C-X-C motif) ligand 13 (B-cell chemoattractant)	<u>NM_006419</u>	CXCL13	40
Granulysin	<u>NM_006433</u>	GNLY	41
CD2 antigen (p50), sheep red blood cell receptor	<u>NM_001767</u>	CD2	42
splicing factor, arginine/serine-rich 6	<u>NM_006275</u>	SFRS6	43
Teratocarcinoma-derived growth factor 1	<u>NM_003212</u>	TDGF1	44
metallothionein 1H	<u>NM_005951</u>	MT1H	45
cytochrome P450, family 2, subfamily B, polypeptide 6	<u>NM_000767</u>	CYP2B6	46
tumor necrosis factor (ligand) superfamily, member 9	<u>NM_003811</u>	TNFSF9	47
	<u>NM_006047</u>	RBM12	48
RNA binding motif protein 12	<u>NM_006047</u>		
heat shock 105kDa/110kDa protein 1	<u>NM_006644</u>	HSPH1	49
	<u>NM_004602</u>	STAU	50
staufen, RNA binding protein (Drosophila)	<u>NM_017452</u>		125
	<u>NM_017453</u>		126
lymphocyte antigen 6 complex, locus G6D	<u>NM_021246</u>	LY6G6D	51
calcium binding protein P22	<u>NM_007236</u>	CHP	52
CDC14 cell division cycle 14 homolog B (S. cerevisiae)	<u>NM_003671</u>	CDC14B	53
	<u>NM_033331</u>		115
Epiplakin 1	<u>XM_372063</u>	EPPK1	54
metallothionein 1X	<u>NM_005952</u>	MT1X	55
Transforming growth factor, beta receptor II (70/80kDa)	<u>NM_003242</u>	TGFBR2	56
protein kinase C binding protein 1	<u>NM_012408</u>	PRKCBP1	57
	<u>NM_183047</u>		124
Transmembrane 4 superfamily member 6	<u>NM_003270</u>	TM4SF6	58
pleckstrin homology domain containing, family B (ejectins) member 1	<u>NM_021200</u>	PLEKHB1	59
apolipoprotein L, 1	<u>NM_003661</u>	APOL1	60
	<u>NM_145343</u>		120
Indoleamine-pyrrole 2,3 dioxygenase	<u>NM_002164</u>	INDO	61

forkhead box A2	NM_021784	FOXA2	62
granzyme H (cathepsin G-like 2, protein h-CCPX)	<u>NM_033423</u>	GZMH	63
baculoviral IAP repeat-containing 3	NM_001165	BIRC3	64
Homo sapiens metallothionein 1H-like protein		AF333388 (Hs 382039)	135
KIAA0182 protein	<u>NM_014615</u>	KIAA0182	117
G protein-coupled receptor 56	<u>NM_005682</u>	GPR56	65
	<u>NM_201524</u>		116
metallothionein 2A	<u>NM_005953</u>	MT2A	66
F-box only protein 21	NM_015002	FBXO21	67
erythrocyte membrane protein band 4.1-like 1	NM_012156, NM_012156	EPB41L1	68
hypothetical protein MGC21416	<u>NM_173834</u>	MGC21416	69
protein O-fucosyltransferase 1	NM_015352, NM_015352	POFUT1	70
metallothionein 1E (functional)	<u>NM_175617</u>	MT1E	71
troponin T1, skeletal, slow	NM_003283	TNNT1	72
chimerin (chimaerin) 2	<u>NM_004067</u>	CHN2	73
heterogeneous nuclear ribonucleoprotein H1 (H)			74
ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit, isoform 1, cardiac muscle	<u>NM_005520</u>	HNRPH1	
eukaryotic translation initiation factor 5A	<u>NM_004046</u>	ATP5A1	75
perforin 1 (pore forming protein)	<u>NM_001970</u>	EIF5A	76
OGT(O-Glc-NAc transferase)-interacting protein 106 kDa	<u>NM_005041</u>	PRF1	77
DEAD (Asp-Glu-Ala-Asp) box polypeptide 27	<u>NM_014965</u>	OIP106	78
vacuolar protein sorting 35 (yeast)	<u>NM_017895</u>	DDX27	79
tripartite motif-containing 44	<u>NM_018206</u>	VPS35	80
transmembrane, prostate androgen induced RNA	<u>NM_017583</u>	TRIM44	81
dynein, cytoplasmic, light polypeptide 2A	NM_020182	TMEPA1	82
	NM_199169		127
	NM_199170		128
	NM_014183	DNCL2A	83
leucine aminopeptidase 3	NM_177953		122
Chromosome 20 open reading frame 35	<u>NM_015907</u>	LAP3	84
	<u>NM_018478</u>	C20orf35	85
solute carrier family 38, member 1	<u>NM_033542</u>		118
	<u>NM_030674</u>	SLC38A1	86

CGI-85 protein	NM_016028	CGI-85	87
death associated transcription factor 1	NM_022105,	DATF1	88
	NM_080796		121
hepatocellular carcinoma-associated antigen 112	NM_018487	HCA112	89
sestrin 1	NM_014454	SESN1	90
hypothetical protein FLJ20315	NM_017763	FLJ20315	91
hypothetical protein FLJ20647	NM_017918	FLJ20647	92
membrane protein expressed in epithelial-like lung adenocarcinoma	NM_024792	CT120	93
DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide	NM_014314	RIG-I	94
keratin 23 (histone deacetylase inducible)	NM_015515,	KRT23	95
UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 6 (Gal-NAc-T6)	NM_007210	GALNT6	96
aryl hydrocarbon receptor nuclear translocator-like 2	NM_020183	ARNTL2	97
apobec-1 complementation factor	NM_014576,	ACF	98
	NM_138932		119
hypothetical protein FLJ20232	NM_019008	FLJ20232	99
apolipoprotein L, 2	NM_030882,	APOL2	100
	NM_145343		120
mitochondrial solute carrier protein	NM_016612	MSCP	101
hypothetical protein FLJ20618	NM_017903	FLJ20618	102
SET translocation (myeloid leukaemia-associated)	NM_003011,	SET	103
	1		
	Xm_030577,		104
ATPase, class II, type 9a	9	ATP9a	

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10. The method of claims 1, 2 or 3, wherein at least two of said plurality of gene expression products forming a pattern used to determine said microsatellite status are selected individually from the group consisting of the genes listed below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
heterogeneous nuclear ribonucleoprotein L	NM_001533	HNRPL	11	
metastasis-associated gene family, member 2	NM_004739	MTA2	23	
chemokine (C-X-C motif) ligand 10	NM_001565	CXCL10	35	
splicing factor, arginine/serine-rich 6	NM_006275	SFRS6	43	

protein kinase C binding protein 1	NM_012408 NM_183047	PRKCBP1	57 124
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	HCA112	89
hypothetical protein FLJ20618 SET translocation (myeloid leukaemia-associated)	<u>NM_017903</u> <u>NM_003011.1</u>	FLJ20618 SET	102 103
ATPase, class II, type 9a	Xm_030577.9	ATP9a	104

11. The method of claims 1, 2 or 3, wherein at least two of said plurality of gene expression products forming a pattern used to determine said microsatellite status are selected individually from the group consisting of the genes listed below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
heterogeneous nuclear ribonucleoprotein L	<u>NM_001533</u>	<u>HNRPL</u>	11	
metastasis-associated gene family, member 2	<u>NM_004739</u>	<u>MTA2</u>	23	
chemokine (C-X-C motif) ligand 10	<u>NM_001565</u>	<u>CXCL10</u>	35	
splicing factor, arginine/serine-rich 6	<u>NM_006275</u>	<u>SFRS6</u>	43	
protein kinase C binding protein 1	<u>NM_012408</u> <u>NM_183047</u>	<u>PRKCBP1</u>	57 124	
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	<u>HCA112</u>	89	
hypothetical protein FLJ20618	<u>NM_017903</u>	<u>FLJ20618</u>	102	
SET translocation (myeloid leukaemia-associated)	<u>NM_003011.1</u>	SET	103	
ATPase, class II, type 9a	Xm_030577.9	ATP9a	104	

12. The method of claims 1, 2 or 3, wherein

i) at least one of said plurality of gene expression products forming a pattern used to determine said microsatellite status is selected from the group of genes consisting of

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
heterogeneous nuclear ribonucleoprotein L	<u>NM_001533</u>	<u>HNRPL</u>	11	
metastasis-associated gene family, member 2	<u>NM_004739</u>	<u>MTA2</u>	23	

Chemokine (C-X-C motif) ligand 10	<u>NM_001565</u>	CXCL10	35
splicing factor, arginine-serine-rich 6	<u>NM_006275</u>	SFRS6	43

and

5 ii) at least one of said plurality of gene expression products forming a pattern used to determine said microsatellite status is selected from the group of genes consisting of

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
protein kinase C binding protein 1	<u>NM_012408</u> <u>NM_183047</u>	PRKCBP1	57 124	
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	HCA112	89	
hypothetical protein FLJ20618	<u>NM_017903</u>	FLJ20618	102	
SET translocation (myeloid leukaemia-associated)	<u>NM_003011.1</u>	SET	103	
ATPase, class II, type 9a	<u>Xm_030577.9</u>	ATP9a	104	

13. The method of claims 1, 2 or 3, wherein

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i) at least one of said plurality of gene expression products forming a pattern used to determine said microsatellite status is selected from the group of genes that are down regulated in MSS colon cancers compared to MSI colon cancers consisting of

Gene name	Ref seq	Gene symbol	SEQ ID NO.:
heterogeneous nuclear ribonucleoprotein L	<u>NM_001533</u>	HNRPL	11
metastasis-associated gene family, member 2	<u>NM_004739</u>	MTA2	23
chemokine (C-X-C motif) ligand 10	<u>NM_001565</u>	CXCL10	35
Splicing factor, arginine-serine-rich 6	<u>NM_006275</u>	SFRS6	43

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and

ii) at least one of said plurality of gene expression products forming a pattern used to determine said microsatellite status is selected from

the group of genes that are up regulated in MSS colon cancers compared to MSI colon cancers consisting of

Gene name	Ref seq	Gene symbol	SEQ ID NO.:
protein kinase C binding protein 1	NM_012408 NM_183047	PRKCBP1	57 124
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	HCA112	89
hypothetical protein FLJ20618	<u>NM_017903</u>	FLJ20618	102
SET translocation (myeloid leukaemia-associated)	<u>NM_003011.1</u>	SET	103
ATPase, class II, type 9a	Xm_030577.9	ATP9a	104

5 14. The method of claim 13, wherein the difference in the level of the gene expression products forming a pattern is at least one-fold.

15. The method of claim 13, wherein the difference of the level of the gene expression products forming a pattern is at least 1.5 fold.

10 16. The method of claim 1, 2 or 3, wherein at least one of said plurality of gene expression products used to determine the hereditary or sporadic nature of said colon cancer are selected individually from the group consisting of the genes as listed below

Gene name	Ref seq	Gene symbol	SEQ ID NO.:
Homeo box C6	NM_004503	HOXC6	105
Piwi – like 1	NM_004764.2	PIWIL1	106
Mut L homolog 1	NM_00249.2	MLH1	107
Collapsin response mediator protein 1	NM_001313.2	CRMP1	108
Homeo box B2	NM_002145.2	HOXB2	109
	NM_002860.2	PYCS/ADH18	110
Pyrroline-5-carboxylate synthetase (glutamate gamma-semialdehyde synthetase)		A1	
TGFB inducible early growth response	NM_005655.1	TIEG	111
Checkpoint with forkhead and ring finger domains ??	NM_018223.1	CHFR	112
Hypothetical protein FLJ13842	NM_024645.1	FLJ13842	113
Phosphoprotein regulated by mitogenic pathways	NM_025195.1	C8FW	114

17. The method of claim 1, 2 or 3, wherein at least two of said plurality of gene expression products forming a pattern used to determine said hereditary or sporadic nature of colon cancer are the two genes as listed below

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Gene name	Ref seq	Gene symbol	SEQ ID NO.:
Piwi – like 1	NM_004764.2	PIWIL1	106
Mut L homolog 1	NM_00249.2	MLH1	107

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18. The method according to claims 1, 2 or 3, wherein the microsatellite status in an individual having contracted colon cancer is microsatellite instable.

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19. The method according to any of the preceding claims, wherein said colon cancer is of Duke's B or Duke's C stage.

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20. The method according to any of the preceding claims, wherein said colon cancer is an adenocarcinoma, a carcinoma, a teratoma, a sarcoma, and/or a lymphoma.

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21. The method according to any of the preceding claims, wherein the sample is a biopsy of the tissue.

22. The method according to any of the preceding claims, wherein the sample is a cell suspension made from the tissue.

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23. The method according to any of the preceding claims, wherein the expression level is determined by determining mRNA of the sample.

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24. The method according to any of the preceding claims, wherein the expression level is determined by determining expression products, such as peptides and/or protein in the sample.

25. The method according to any of the preceding claims, wherein the microsatellite status of the colon cancer in an individual has been determined prior to the determination of the presence and/or amount of gene expression products

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26. The method according to any of the preceding claims, wherein the sporadic or hereditary nature of a colon cancer has been determined prior to the determination of the presence and/or amount of gene expression products.

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27. A method for classification of cancer in an individual having contracted cancer, wherein the microsatellite status is determined by a method comprising the steps of

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- i) in a sample from the individual having contracted cancer, said sample comprising a plurality of gene expression products the presence and/or amount of which forms a pattern that is indicative of the microsatellite status of said cancer,
- ii) determining the presence and/or amount of said gene expression products forming said pattern,
- iii) obtaining an indication of the microsatellite status of said cancer in the individual based on step ii).

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28. A method for classification of cancer in an individual having contracted cancer, wherein the hereditary or sporadic nature of the cancer is determined by a method comprising the steps of

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- i) in a sample in a sample from the individual having contracted cancer, said sample comprising a plurality of gene expression products the presence and/or amount of which forms a pattern that is indicative of the hereditary or sporadic nature of said cancer,
- ii) determining the presence and/or amount of said gene expression products forming said pattern,
- iii) obtaining an indication of the hereditary or sporadic nature of said cancer in the individual based on step ii).

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29. The method according to claim 28, wherein the microsatellite status of said cancer is determined simultaneously or sequentially therewith.

5 30. A method for treatment of an individual comprising the steps of

- selecting an individual having contracted a colon cancer, wherein the microsatellite status is stable, determined according to the method of claims 1, 2, 3, 27 or 28
- treating the individual with anti cancer drugs

10 31. The method of treatment according to claim 30, wherein the anti cancer drug is selected from the group of fluorouracil-based drugs.

15 32. The method of treatment according to claim 31, wherein the anti cancer drug is selected from 5-fluorouracil, N-methy-N'-nitro-N-nitroso guanidine and/or 6-thioguanine.

20 33. The method of treatment according to claim 30, wherein the anti cancer drug is selected from the group of non-fluorouracil based drugs.

34. The method according to claim 33, wherein the anti cancer drug is selected from leucovorin, irinotecan, oxaliplatin, cetuximab.

25 35. A method for treatment of an individual comprising the steps of

- selecting an individual having contracted a colon cancer, wherein the microsatellite status is instable, determined according to the method of claims 1, 2, 3, 27 or 34
- treating the individual with anti cancer drugs.

30 36. The method according to claim 35, wherein the anti cancer drug is selected from camptothecin or irinotecan.

35 37. The method according to claim 30 or 35, wherein the microsatellite status has been determined by microsatellite analysis, ELISA, antibody-based histochemical staining, immuno histo chemistry.

38. The method according to claim 30 or 35 wherein the sporadic or hereditary nature of colon cancer has been examined prior to determining the sporadic or hereditary nature of colon cancer by gene expression products forming a pattern.

39. The method according to claim 30 or 35 wherein the sporadic or hereditary nature of colon cancer has been examined by histological examination of the sample.

40. The method according to claim 30 or 35 wherein the sporadic or hereditary nature of colon cancer has been examined by genotyping the sample.

41. A method for reducing malignancy of a cell, said method comprising contacting a tumor cell in question with at least one peptide expressed by at least one gene selected from genes being expressed in an at least two-fold higher in tumor cells than the amount expressed in said tumor cell in question.

42. The method according to claim 41, wherein the at least one peptide is selected individually from genes comprising a sequence as identified below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
heterogeneous nuclear ribonucleoprotein L	<u>NM_001533</u>	HNRPL	11	
metastasis-associated gene family, member 2	<u>NM_004739</u>	MTA2	23	
chemokine (C-X-C motif) ligand 10	<u>NM_001565</u>	CXCL10	35	
splicing factor, arginine/serine-rich 6	<u>NM_006275</u>	SFRS6	43	

43. The method according to claim 41, wherein the at least one peptide is selected individually from genes comprising a sequence as identified below

Gene name	Ref seq	Gene	SEQ ID
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		symbol	NO.:
protein kinase C binding protein 1	NM_012408 NM_183047	PRKCBP1	57 124
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	HCA112	89
hypothetical protein FLJ20618 SET translocation (myeloid leukaemia-associated)	<u>NM_017903</u> <u>NM_003011.1</u>	FLJ20618 SET	102 103
ATPase, class II, type 9a	<u>Xm_030577.9</u>	ATP9a	104

44. The method according to claim 41 or 42, wherein the tumor cell is contacted with at least two different peptides.

5 45. A method for reducing malignancy of a tumor cell in question comprising,

- obtaining at least one gene selected from genes being expressed in at least one fold higher in tumor cells than the amount expressed in the tumor cell in question,
- introducing said at least one gene into the tumor cell in question in a manner allowing expression of said gene(s).

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46. The method according to claim 45, wherein the at least one gene is selected from genes comprising a sequence as identified below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
Heterogeneous nuclear ribonucleoprotein L metastasis-associated gene family, member 2	<u>NM_001533</u>	HNRPL	11	
			23	
Chemokine (C-X-C motif) ligand 10	<u>NM_004739</u>	MTA2		
splicing factor, arginine/serine-rich 6	<u>NM_001565</u>	CXCL10	35	
	<u>NM_006275</u>	SFRS6	43	

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47. The method according to claim 45, wherein the at least one gene is selected from genes comprising a sequence as identified below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
Protein kinase C binding protein 1	NM_012408 NM_183047	PRKCBP1	57 129	
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	HCA112	89	
hypothetical protein FLJ20618	<u>NM_017903</u>	FLJ20618	102	

SET translocation (myeloid leukaemia-associated)	<u>NM_003011.1</u>	SET	103
ATPase, class II, type 9a	<u>Xm_030577.9</u>	ATP9a	104

48. The method according to claim 45, 46 or 47, wherein at least two different genes are introduced into the tumor cell.

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49. A method for reducing malignancy of a cell in question, said method comprising

10 obtaining at least one nucleotide probe capable of hybridising with at least one gene of a tumor cell in question, said at least one gene being selected from genes being expressed in an amount at least one-fold lower in tumor cells than the amount expressed in said tumor cell in question, and

15 introducing said at least one nucleotide probe into the tumor cell in question in a manner allowing the probe to hybridise to the at least one gene, thereby inhibiting expression of said at least one gene.

20 50. The method according to claim 49, wherein the nucleotide probe is selected from probes capable of hybridising to a nucleotide sequence comprising a sequence as identified below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
protein kinase C binding protein 1	<u>NM_012408</u> <u>NM_183047</u>	PRKCBP1	57 124	
hepatocellular carcinoma-associated antigen 112	<u>NM_018487</u>	HCA112	89	
hypothetical protein FLJ20618	<u>NM_017903</u>	FLJ20618	102	
SET translocation (myeloid leukaemia-associated)	<u>NM_003011.1</u>	SET	103	
ATPase, class II, type 9a	<u>Xm_030577.9</u>	ATP9a	104	

51. The method according to claim 46, wherein the nucleotide probe is selected from probes capable of hybridising to a nucleotide sequence comprising a sequence as identified below

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
heterogeneous nuclear ribonucleoprotein L	<u>NM_001533</u>	HNRPL	11	
metastasis-associated gene family, member 2	<u>NM_004739</u>	MTA2	23	
chemokine (C-X-C motif) ligand 10	<u>NM_001565</u>	CXCL10	35	
splicing factor, arginine/serine-rich 6	<u>NM_006275</u>	SFRS6	43	

5

52. The method according to claim 49, 50 or 51, wherein at least two different probes are introduced into the tumor cell.

10 53. A method for producing antibodies against an expression product of a cell from a biological tissue, said method comprising the steps of

obtaining expression product(s) from at least one gene said gene being expressed as defined in any of claims 1-29,

15 immunising a mammal with said expression product(s) obtaining antibodies against the expression product.

54. A method for treatment of an individual comprising the steps of
 20 i) selecting an individual having contracted a colon cancer, wherein the microsatellite status is stable, determined according to the method of claims 1, 2, 3, 27 or 28 and wherein the hereditary nature of said cancer has been determined according to the method of claims 1, 2 or 3

25 ii) introducing at least one gene into the tumor cell in a manner allowing expression of said gene(s).

55. The method according to claim 54, wherein the at least one gene is selected from MSH2, MLH1, PMS1, PMS2 or MSH6.

30

Gene name	Ref seq	Gene symbol	SEQ NO.:	ID
Homo sapiens mutS homolog 2, colon cancer, nonpolyposis type 1 (E. coli)	NM_000251	MSH2	136	
Mut L homolog 1	NM_00249.2	MLH1	107	
Homo sapiens PMS1 postmeiotic segregation increased 1 (S. cerevisiae)	NM_000534	PMS1	137	
Homo sapiens PMS2 postmeiotic segregation increased 2 (S. cerevisiae) (PMS2), mRNA	NM_000535	PMS2	138	
Homo sapiens mutS homolog 6 (E. coli)	NM_000179	MSH6	139	

56. The method according to claim 54 or 55, wherein at least two different genes are introduced.

5 57. Pharmaceutical composition for the treatment of a classified cancer comprising at least one antibody as defined in claim 53.

58. Pharmaceutical composition for the treatment of a classified cancer comprising at least one polypeptide as defined in any of the claims 41-

10 44.

59. Pharmaceutical composition for the treatment of a classified cancer comprising at least one nucleic acid and/or probe as defined in any of the claims 45-52.

15 60. The use of a method as defined in any of claims 1- 37 for producing an assay for classifying cancer in animal tissue.

20 61. The use of a peptide as defined in any of claims 41-44 for preparation of a pharmaceutical composition for the treatment of a cancer in animal tissue.

62. The use of a gene as defined in any of claims 45-52 for preparation of a pharmaceutical composition for the treatment of cancer in animal tissue.

63. The use of a probe as defined in any of claims 49-52 for preparation of a pharmaceutical composition for the treatment of cancer in animal tissue.

64. An assay for classification of cancer in an individual having contracted
5 cancer, comprising

at least one marker capable of determining the microsatellite status in
a sample and

10 at least one marker in a sample determining the prognostic marker,
wherein the microsatellite status and the prognostic marker is determined simultaneously or sequentially.

15 65. The assay according to claim 64, wherein the marker is a nucleotide probe.

66. The assay according to claim 64, wherein the marker is an antibody.

20 67. The assay according to claim 64, wherein the genes are as defined in
any of claims 9-13 or 16-17.